

REMARKS

A. Status of the Claims

Claims 1-12, 14-35, 38-51 and 61-66 were pending at the time of the last Office Action. Claims 1, 15, 35 have been amended for the reasons discussed below, and certain of their dependent claims have been amended to preserve the appropriate antecedent basis. Claim 46 has been amended for the reason set forth below. No claims have been cancelled. Thus, claims 1-12, 14-35, 38-51 and 61-66 remain pending.

B. Claim 46 Has Been Corrected

As directed, Applicants have amended claim 46 to recite the term “material” after the term “dielectric.”

C. Claims 1, 2, 5-10, 38 and 40-42 Are Patentable over Dawes

The Office rejects claim 1, 2, 5-10, 38 and 40-42 under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,488,414 to Dawes *et al.* (Dawes). Applicants respectfully traverse.

1. Claims 1, 2, and 5-10

Claim 1 is directed to a waveguide grating device comprising a waveguide grating fabricated on the endface of at least one waveguide. Claim 1 has been amended for the sole purpose of making more explicit the distinction it has with Dawes (and Farah, discussed below): the claimed waveguide grating is a guided-mode resonance waveguide grating. This is not a narrowing amendment because those of ordinary skill in the art, when reading “waveguide grating” in light of Applicants’ specification, will understand that “waveguide grating” has the same meaning as “guided-mode resonance waveguide grating.” *See*, for example, the use of “waveguide grating” in R. Magnusson *et al.*, “New Principle for Optical Filters,” *Applied*

Physics Letters, 61:1022-1024, 1992 (reference C28), S. Tibuleac, “Characteristics of Reflection and Transmission Waveguide-Grating Filters,” *UTA Masters Thesis*, 1996 (reference C57) and U.S. Patent No. 5,598,300 (reference A2). These prior art references constitute evidence of the plain and ordinary meaning of the term “waveguide grating.” *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1584 (Fed. Cir. 1996) (explaining that prior art is a good source for establishing the meaning of a term to those skilled in the art); *accord Fin Control Sys. PTY, Ltd. v. OAM, Inc.*, 265 F.3d 1311, 1319 (Fed. Cir. 2001).

It is clear that the Office has not yet recognized the well-known meaning of “waveguide grating” based on its decision to consistently construe the claim term “waveguide grating” so broadly that it covers the ordinary diffraction gratings disclosed in references like Dawes and Farah. *See* MPEP § 2111 at 2100-47 (“The broadest reasonable interpretation of the claims **must also be consistent** with the interpretation that those skilled in the art would reach.”) (citation omitted; emphasis added). As a result, Applicants are making this non-limiting amendment in order to advance the prosecution of this application.

Dawes fails to teach or suggest the claimed “guided-mode resonance waveguide grating.” The Office asserts that Dawes’ expanded core silica waveguide member 40 and attached optical element 26 (which can be a diffractive or refractive lens; col. 5, lines 15-19) satisfies the originally claimed “waveguide grating.” This is incorrect considering the well-known meaning of “waveguide grating” to those of ordinary skill in the art. *See* references cited above. Dawes’ shortcoming is even more clear now that claim 1 has been amended to make explicit that a **guided-mode resonance** waveguide grating is being claimed. Dawes’ waveguide member/optical element combination is incapable of achieving a guided-mode resonance and therefore does not qualify as a guided-mode resonance waveguide grating.

Accordingly, claim 1 and its rejected dependent claims are patentable over Dawes. Applicants request that the Office remove the anticipation rejection of these claims and allow them to issue.

2. Claims 38 and 40-42

Claim 38 is directed to a method of forming a waveguide grating device comprising fabricating a waveguide grating on the endface of a waveguide to form the waveguide grating device. Applicants have amended claim 38 in the same way as claim 1, and for the same reason. Accordingly, claim 38 and its rejected dependent claims are patentable over Dawes. Applicants request that the Office remove the anticipation rejection of these claims and allow them to issue.

D. Claims 38, 39, 46 and 47 Are Patentable over Farah

The Office rejects claim 38, 39, 46 and 47 as being anticipated by U.S. Patent No. 5,891,747 to Farah (Farah). Applicants respectfully traverse.

Farah discloses only a diffraction grating (*see* discussion in July 19, 2004 response). Farah fails to disclose or suggest a guided-mode resonance waveguide grating. Accordingly, Farah fails to anticipate claim 38 or any of its rejected dependent claims. Applicants request that the Office remove the anticipation rejection and allow these claims to issue.

E. Claim 3 Is Patentable over the Asserted Combination

The Office rejects claim 3 as being obvious over Dawes in view of U.S. Patent No. 4,953,947 to Bhagavatula (Bhagavatula). Applicants respectfully traverse. Claim 3 depends from claim 1, which is patentable over Dawes as explained above. Bhagavatula fails to cure Dawes' deficiency. Therefore, claim 3 is patentable over the asserted combination. Accordingly, the obviousness rejection of claim 3 should be withdrawn and the claim should be issued.

F. Claims 4, 11, 12, 14 and 46 Are Patentable over the Asserted Combination

The Office rejects claims 4, 11, 12, 14 and 46 as being obvious over Dawes in view of U.S. Patent No. 5,598,300 to Magnusson *et al.* (Magnusson). Applicants respectfully traverse. Claims 4, 11, 12 and 14 depend from claim 1, which is patentable over Dawes as explained above. Unlike Dawes, Magnusson does disclose a guided-mode resonance waveguide grating. However, neither Dawes nor Magnusson disclose or suggest—alone or in combination—a guided-mode resonance waveguide grating fabricated on the endface of a waveguide.

Furthermore, there is no motivation for replacing Dawes' expanded core silica waveguide member 40 and optical element 26 with Magnusson's guided-mode resonance waveguide grating. Dawes' device 20, which includes waveguide member 40 and optical element 26, is a collimator. Col. 5, lines 15-19. Waveguide member 40 serves as the beam expander/collimator. Col. 5, lines 15-64. Dawes is not concerned with the near-ideal to ideal filtering achievable using Magnusson's guided-mode resonance waveguide grating.

Moreover, combining the teachings of Magnusson with those of Dawes would change the principle of operation of Dawes device because it would eliminate Dawes' beam expander/collimator, which provides the beam expanding/collimating functionality critical to Dawes' collimator. As such, the asserted combination is improper. MPEP § 2143.01 at 2100-132 ("If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious.") (citing *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959)).

Accordingly, claims 4, 11, 12 and 14 are patentable over the asserted combination of Dawes and Magnusson. Applicants request that the Office withdraw the obviousness rejection of these claims, and allow them to issue.

Claim 46 depends from claim 38, which is patentable over Dawes as explained above. Furthermore, the analysis above regarding the impropriety of the asserted combination of Dawes and Magnusson applies with equal force to claim 46. Applicants therefore request that the Office withdraw the obviousness rejection of this claim, and allow it to issue.

G. Claims 15-19, 22, 24-35 and 61-66 Are Patentable over the Asserted Combination

The Office rejects claims 15-19, 22, 24-35 and 61-66 as being obvious over Dawes in view Magnusson and U.S. Patent No. 6,191,890 to Baets *et al.* (Baets). Applicants respectfully traverse.

1. Claims 15-19, 22, 24-34 and 61-62

The Office asserts Dawes as modified by Magnusson and Baets can be combined to arrive at the subject matter of claim 15. Claim 15 has been amended in the same way as claims 1 and 38, and for the same reasons. As explained above, the asserted combination of Dawes and Magnusson is improper. Although Baets discloses a grating fill factor as a variable parameter of his grating structures, the predicate combination of Dawes and Magnusson is improper, as explained above. Thus, there can be no motivation to combine Baets' technology with Dawes'. Accordingly, claim 15 is patentable over the asserted combination. Applicants request that the rejection of this claim be withdrawn, and that claim 15 be allowed to issue.

The Office's assertions about the teachings of Dawes with respect to claims 16-19 and 22—which Applicants do not concede as accurate—fail to cure the deficiencies noted above.

Accordingly, these claims are patentable over the asserted combination and should be allowed to issue.

The Office's asserted combination of Dawes and Magnusson with respect to claim 24 fails for the same reasons given above with respect to claims 4, 11, 12 and 14. Accordingly, claim 24 is patentable over the asserted combination and should be allowed to issue.

The Office's assertions about the teachings of Dawes with respect to claims 25-34—which Applicants do not concede as accurate—fail to cure the deficiencies noted above. Accordingly, these claims are patentable over the asserted combination and should be allowed to issue.

The Office's assertion about the teachings of Dawes with respect to claim 61—which Applicants do not concede as accurate—fails to cure the deficiencies noted above. Accordingly, claim 61 is patentable over the asserted combination and should be allowed to issue.

The Office's asserted combination of Dawes and Magnusson with respect to claim 62 fails for the same reasons given above with respect to claims 4, 11, 12 and 14. Accordingly, claim 62 is patentable over the asserted combination and should be allowed to issue.

2. Claims 35 and 63-66

The Office asserts Dawes as modified by Magnusson and Baets can be combined to arrive at the subject matter of claim 35. Claim 35 has been amended in the same way as claims 1 and 38, and for the same reasons. As explained above, the asserted combination of Dawes and Magnusson is improper. Although Baets discloses a grating fill factor as a variable parameter of his grating structures, the predicate combination of Dawes and Magnusson is improper, as explained above. Thus, there can be no motivation to combine Baets' technology with Dawes'.

Accordingly, claim 35 is patentable over the asserted combination. Applicants request that the rejection of this claim be withdrawn, and that claim 35 be allowed to issue.

The Office's assertions about the teachings of Dawes with respect to claims 63-65—which Applicants do not concede as accurate—fail to cure the deficiencies noted above. Accordingly, these claims are patentable over the asserted combination and should be allowed to issue.

The Office's asserted combination of Dawes and Magnusson with respect to claim 66 fails for the same reasons given above with respect to claims 4, 11, 12 and 14. Accordingly, claim 66 is patentable over the asserted combination and should be allowed to issue.

H. Claim 20 Is Patentable over the Asserted Combination

The Office rejects claim 20 as being obvious over Dawes in view Magnusson and Baets, and further in view of U.S. Patent No. 5,343,542 to Kash *et al.* (Kash). Applicants respectfully traverse. Claim 20 depends from claim 19, which is patentable over Dawes in view of Magnusson and Baets as explained above. Kash does not cure the deficiency of the improperly asserted combination of Dawes, Magnusson and Baets, regardless of whether Kash discloses a “detector comprising silicon,” as asserted by the Office. Accordingly, claim 20 is patentable over the asserted combination and should be allowed to issue.

I. Claim 21 Is Patentable over the Asserted Combination

The Office rejects claim 21 as being obvious over Dawes in view Magnusson and Baets, and further in view of U.S. Patent No. 4,533,247 to Epworth (Epworth). Applicants respectfully traverse. Claim 21 depends from claim 19, which is patentable over Dawes in view of Magnusson and Baets as explained above. Epworth does not cure the deficiency of the improperly asserted combination of Dawes, Magnusson and Baets, regardless of whether

Epworth discloses a “detector comprising a human eye,” as asserted by the Office. Accordingly, claim 21 is patentable over the asserted combination and should be allowed to issue.

J. Claim 23 Is Patentable over the Asserted Combination

The Office rejects claim 23 as being obvious over Dawes in view Magnusson and Baets, and further in view of Bhagavatula. Applicants respectfully traverse. Claim 23 depends from claim 15, which is patentable over Dawes in view of Magnusson and Baets as explained above. Bhagavatula does not cure the deficiency of the improperly asserted combination of Dawes, Magnusson and Baets, regardless of whether Bhagavatula discloses a “waveguide rectangular in shape,” as asserted by the Office. Accordingly, claim 23 is patentable over the asserted combination and should be allowed to issue.

K. Claim 39 Is Patentable over the Asserted Combination

The Office rejects claim 39 as being obvious over Dawes in view of Farah. Applicants respectfully traverse. Claim 39 depends from claim 38, which is patentable over Dawes as explained above. Farah does not cure Dawes’ deficiency, regardless of whether Farah discloses cleaving, as asserted by the Office. Accordingly, claim 39 is patentable over the asserted combination and should be allowed to issue.

L. Claims 43 and 44 Are Patentable over the Asserted Combination

The Office rejects claims 43 and 44 as being obvious over Dawes in view of Farah. Applicants respectfully traverse. These claims depend from claim 42, which is patentable over Dawes as explained above. Farah does not cure Dawes’ deficiency, regardless of whether Farah discloses holographic interferometry or photolithography patterning, as asserted by the Office. Accordingly, these claims are patentable over the asserted combination and should be allowed to issue.

M. Claims 45 and 48 Are Patentable over the Asserted Combination

The Office rejects claims 45 and 48 as being obvious over Dawes in view of U.S. Patent No. 5,291,574 to Levenson *et al.* (Levenson). Applicants respectfully traverse.

Claim 45 depends from claim 40, which is patentable over Dawes as explained above. Levenson does not cure Dawes' deficiency, regardless of whether Levenson discloses spin coating, as asserted by the Office. Accordingly, claim 45 is patentable over the asserted combination and should be allowed to issue.

Claim 48 depends from claim 38, which is patentable over Dawes as explained above. Levenson does not cure Dawes' deficiency, regardless of whether Levenson discloses sputtering, as asserted by the Office. Accordingly, claim 48 is patentable over the asserted combination and should be allowed to issue.

N. Claims 49-51 Are Patentable over the Asserted Combination

The Office rejects claims 49-51 as being obvious over Dawes in view of U.S. Patent No. 6,096,127 to Dimos *et al.* (Dimos). Applicants respectfully traverse.

Claims 49-51 depend from claim 38, which is patentable over Dawes as explained above. Dimos does not cure Dawes' deficiency, regardless of whether Dimos discloses thermal evaporation, electron-beam evaporation or liquid phase epitaxy, as asserted by the Office. Accordingly, these claims are patentable over the asserted combination and should be allowed to issue.

O. Petition for Extension of Time

Pursuant to 37 C.F.R. § 1:136(a), Applicants petition for an extension of time of two months up to and including February 21, 2005 (which extends to February 22, 2005 in light of the February 21st holiday) in which to respond to the Office Action mailed September 21, 2004. Pursuant to 37 C.F.R. § 1.16 and 1.17, a check in the amount of \$405 is enclosed, which includes

the process fee for a two-month extension of time. If the check is inadvertently omitted, or should any additional fees under 37 C.F.R. §§ 1.16 to 1.21 be required for any reason relating to the enclosed materials, or should an overpayment be included, the Office is authorized to deduct or credit the appropriate fees from or to Fulbright & Jaworski Deposit Account No.: 50-1212/UTSL:058US/MTG.

P. Conclusion

Applicants respectfully submit that claims 1-12, 14-35, 38-51 and 61-66 are in condition for allowance. Should the examiner have any questions, comments, or suggestions relating to this application, he **and Supervisory Examiner Glick** are invited to contact the undersigned attorney at (512) 536-3031 in an effort to narrow any perceived patentability issues and advance prosecution as quickly as possible.

Respectfully submitted,



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